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Forests and Irrigation.

THE article of Major Powell, Director of the United States Geological Survey, in the April number of the *Century Magazine*, on the forests and arid lands of the west, has failed to attract the attention which the importance of the subject and the position of the writer would seem to warrant. This is due, no doubt, in a certain degree to the fact that the article is in the form of a rhapsody rather than a sustained and coherent argument. The serious reader finds it difficult to persuade himself that a man of science with any clear thought on a matter within the scope of his profession would attempt to give it expression in such a tumefied style. There are portions of the article, however, which the ordinary reader can understand, and in some of these he will find rather eccentric deviations from the teachings of experience in all times and countries. It is not a novel notion, for example, that forests help to dry out the earth by pumping up the soil-water with their roots and transpiring it through their leaves. But there are many counteracting agencies which enter into the complex problems involved and the presence of forests on the high lands about the sources of streams has never before been held to be detrimental to their equable flow. Major Powell speaks of researches made by scientific men, whose names he does not divulge, which are said to prove that in the Wasatch Mountains the streams have been increased by cutting off the timber at their sources. This may mean that the water runs off more rapidly and thus aggravates the freshets in their season, and if so it is doubtless true. But that there is any body of experience to justify the stripping of timber from our western mountain slopes, in order to help out the water supply of the arid region, few persons will believe. Major Powell speaks with some pity of the persons who offer factitious reasons for preserving the woods, but he would not hesitate to begin the active destruction of forests where they never could be replaced, upon a theory which has never been proved valid and which is condemned by every recognized authority on the subject.

And who are the men of science on the Wasatch Mountains or elsewhere who have furnished data for the theory that cutting off the woods is a prudent process, because, with the trees away, the winds will sweep the snow into gullies, where it will melt more slowly and be delivered more equably to the streams below. This is certainly an unsubstantiated hypothesis, to say the least, and to most people it seems like a wild guess. No facts have ever been published to show that the cutting away of forests will be efficient to hold any available water supply in the form of snow-banks; and yet the restraint which forests offer to drifting snow is presented with apparent seriousness as a reason why a growth of timber in the mountain regions is harmful to the interests of the people in the valleys who depend on the streams for the fertilization of their farms.

It is small wonder that a man who is so ready to frame an indictment against the woods should repeat the story of his success in exterminating them. Once before, at least, he related it in this city and we then quoted it in these columns. "It was twenty years ago," says Major Powell, "when I kindled a fire at the trunk of a great Pine, and in the chill of the evening gazed at its welcome flame. Soon I saw it mount, climbing the trunk, crawling out along the branches, igniting the rough bark, kindling the cones, and setting fire to the needles, until in a few minutes the great forest-Pine was all one pyramid of flame, which illumined a temple in the wilderness domed by a starless night. Sparks and flakes of fire were borne by the wind to other trees, and the forest was ablaze. On it spread, and the lingering storm came not to extinguish it. Gradually the crackling and roaring of the fire became terrific. Limbs fell with a crash, trees tottered and were thrown prostrate; the noise of falling timber was echoed from rocks and cliffs; and here, there, everywhere, rolling clouds of smoke were starred with burning cinders. On it swept for miles and scores of miles, from day to day, until more timber was destroyed than has been used by the people of Colorado for the last ten years."

It would be unjust to say that Major Powell writes boastfully of this feat, but we fail to find any expression of remorse or regret for the destruction of all this sylvan wealth and beauty. No right-minded person can read of it even now without pain. It seems to have been absolutely without excuse. Under laws which now exist it would be criminal incendiarism. There is no probability that Major Powell has continued to start conflagrations in the forests of the public domain during the twenty years since the date of this historic fire, but we consider it a misfortune that he is still ready to teach that they are likely to prove obstacles to agriculture in the plains below them. Other men eminent in science have considered them the natural mountain reservoirs for storage and distribution. It is easy enough to cut them away or to kindle fires that will destroy them. But in many cases, when once the mountains are made bare, they never can be reclad, at least without enormous expense. Dam-building has great fascination for an engineer, but there will be ample opportunity to expend millions on artificial reservoirs, and certainly it is not the part of prudence to destroy the forests on the doubtful theory that bald peaks will in some way help along the dams. The work of forest-destruction is already going on with a vigor which needs no encouragement. It seems to us the part of wisdom to use every effort to arrest it. We believe that any rational system of irrigation will include the preservation of the woods, especially in the places where Major Powell seems to think them obstructive and baneful.

RECENT numbers of *The Forum* and of *The Country Gentleman* have contained articles from Mr. C. Wood Davis, a Kansas farmer, which attempt to show that the arable lands of the public domain have been so rapidly taken for agricultural use during the past twenty years that they will be completely occupied at a much earlier date than has heretofore been deemed possible. The fundamental reason generally given for abandoned farms in the east and

depressed agriculture in general has been the rapid expansion of the cultivated area of the country, and therefore the increase of staple farm products beyond the home demand for them. Whether certain prosperity awaits the farmer as soon as the country will consume all that he can produce is not a question to be discussed here, but the figures which indicate that we shall be compelled to import wheat before the end of the century are interesting.

It is probable that Mr. Davis underrates the productive capacity of our total farm area, but after making due allowance for this we are prepared to believe that his prophecy is worth considering. Our people have acquired a habit of boasting of the country's ability to feed the world and of our exhaustless wealth in general. But natural resources are not infinite. A few years ago we were talking of our exhaustless wealth of timber, but our forests of White Pine, the most important timber-tree of the continent, are no longer spoken of as boundless; dealers in hard-wood know that the supply of Walnut and Ash will not endure forever, and there is a growing belief that the Long-leaved Pine is doomed. In like manner we may soon discover that good land can no longer be had for the asking, and that every acre which can profitably be tilled, even with the help of irrigation, has been brought under the plow.

American Dried Fruits in Foreign Markets.

TWO complaints have been made against the healthfulness of American dried fruit. The first is that when this product is sulphur-bleached there is a question whether the after-drying removes all traces of the sulphur, and therefore whether the fruit has absorbed and retains enough sulphuric acid to impair its healthfulness and flavor. The other objection is that when fruit is dried on galvanized wire trays it takes up a sufficient quantity of zinc to make it poisonous. Very careful chemical tests made in this country have failed to secure any proof of the presence of free sulphuric acid, and Dr. Lattimore, in behalf of the New York State Board of Health, after testing numerous samples of the evaporated fruit, found no trace of zinc. Nevertheless the exclusion of our fruit from certain European markets particularly on account of alleged danger from zinc is a serious matter to producers. The fact seems to be that traces of zinc have been discovered in exported fruits, and although the quantity was so minute as to be utterly harmless, this serves as a pretext for shutting out our fruits from foreign markets, and therefore any remedy or any method of evaporation which will leave the dried fruit absolutely free from foreign substances is much to be desired. We add a portion of an interesting paper which was read by Mr. Michael Doyle, of Rochester, at the meeting of the Western New York Horticultural Society last winter, and which has been published in the proceedings of that meeting:

The agitation against evaporated fruits commenced in 1884 in Holland, and since then has spread to Germany, the largest consuming country in Europe, and later to the other adjacent countries. It is claimed by the health authorities that evaporated apples contain minute portions of the oxides of zinc to an extent more or less deleterious to human health. Not a single case of illness resulting from a proper use of this fruit has ever been reported in this country or the United Kingdom, notwithstanding the fact that tens of thousands of tons have been manufactured and consumed since the business began some eighteen years ago. The effort on the part of the German government to prevent the importation of this class of fruit has been based largely upon the desire of excluding it, for the object of encouraging the manufacture of the same class of goods in Germany. Only a few years ago the Hanoverian government gave the sum of 50,000 marks, say $12,500, for the establishment of an evaporating factory, the first of its kind in that country. The promoter of the scheme did not, however, calculate with much accuracy upon the large quantity of fruit required to keep the factory in steady operation, and he found it impossible to secure a sufficient supply. Besides, the cost was so much above the value of the product when offered in competition with fruit shipped from this country, that the manufacture was only continued by drawing on the subsidy of the government to cover the loss. In other words, fruit was offered from here at about seven and a half cents delivered at Bremen, while that made at Hildessheim cost fully ten cents per pound. As a result, the evaporator was operated until the donation of the government was exhausted, then stopped, and it has not since been reopened; for the German experimenters have found to their satisfaction that, in the present condition of orchard-culture in their country, they cannot compete profitably with America. This we believe to be the beginning of the alarm in that country over American apples.

It is safe to say that there is no more danger in fruit dried upon galvanized trays than there is from the employment of the ordinary tinned cooking utensils. At present it is almost impossible to do business with Germany without furnishing a sworn declaration as well as a chemist's certificate, attested by the Consul at New York, declaring and showing that the goods are absolutely free from zinc or zinc oxides. Goods which are found to contain even the most minute quantity are confiscated by the Government officials and their value destroyed by pouring crude petroleum on the fruit, which renders it unfit for food. As a result the business is done with no little hardship, and many houses in Hamburg and Bremen have abandoned the sale of American fruit, as the penalties, not only in the way of confiscation of the fruit, but of heavy fines and long imprisonment, are sufficient to make the dealers extremely careful and cautious in handling the product.

But although our fruit contains no injurious amount of zinc, we must prepare it absolutely free from every trace of the metal or we can make no sales. Fruit dried on wooden trays, or those made from netting, is absolutely free from zinc. Recent analysis has shown this; and although the change was made at a rather inopportune time, and rather late in the season, the quantity of fruit produced and dried on those trays was quite considerable, all of which has been taken without objection abroad. A prompt improvement is necessary, either by greater care in the use of galvanized trays, for it has been shown that the small particles of zinc found in the fruit have been caused by the use of the iron scrapers used in removing the fruit, which very often adheres to the wire, or by ceasing to use them. The use of these sieves for three seasons has shown a loss of twenty-four per cent. of the weight of the zinc galvanism by this means alone. In order to retain the trade established many years ago on the Continent it is imperative that some other system be employed, for it is only by abandoning the galvanized trays that the prejudice necessarily created against the product can be successfully overcome.

There is room for inventive genius in this direction, and proper remuneration will attend the successful efforts of the man who will offer to the manufacturers a satisfactory substitute for the galvanized wire now employed. It should possess fire-proof qualifications if of either wood or netting, and if metallic it should not be liable to oxidation and should not discolor the fruit. Just now this is the only impediment to increased trade abroad, which will undoubtedly follow these much needed improvements in the manufacture, and all fruit growers should be interested in pushing the industry to its maximum development, and thereby assure a remunerative outlet for our constantly increasing orchard-products.

Parterres in the Parks of St. Germain.

NO more delightful place than St. Germain en Laye can be reached in a day's excursion from Paris. For generations the ancient palace and the adjacent forest were favorite resorts of royalty on pleasure bent, and the strong walls of the former frequently served as a safe place of retreat for one court faction or another especially during the wars of the Fronde. A so-called "New Palace" was built by Henri IV., but nothing now remains of it except some portions of its terrace walls and the pavilion called by his name. Adjoining this last is the magnificent terrace for the sake of which and the view that it affords the tourist now seeks St. Germain. It was constructed by Le Nôtre during the reign of Louis XIV., measures 12,500 yards in length by about forty yards in breadth, is planted with avenues of great trees, and commands a wide and beautiful panorama, with the winding Seine as the central feature and Paris far off in the distance.

In addition to this terrace Le Nôtre laid out extensive gardens at St. Germain and ornamented them with fountains and statues. But they have entirely disappeared. The garden shown in our picture is a modern creation and occupies a different site, a portion of the forest having been cut to make room for it. The forest fills a promontory formed by one of the bends of the Seine, and the trees it contains are chiefly

Oaks, Elms, Chestnuts and Hornbeams. Lacking the picturesque wild charm of the Forest of Fontainebleau, it has a sober and massive beauty of its own, with its dense growth of trees divided at regular intervals by straight avenues and alleys. It contains several small buildings, among them one called *Les Loges*, which is a government school for young girls. From this building the view we present (see page 299) is taken, showing another adaptation of that system of planting called "French parterres," to which we have several times referred during the past few months. Seen in connection with the building itself, the effect of such formal planting is, of course, better appreciated; but the picture shows how well it has been joined to the forest beyond. If this had the varied natural aspect we find at Fontainebleau, its association with a formal garden would have been less justifiable; but here, where it is formal itself in character, an appropriate garden foreground for a dignified structure has been secured with no violation of the laws of harmony.

Pinus glabra.

LOCAL in its distribution, and sparsely scattered amongst the rich and varied tree growth of the heavy forests in the southern states east of the Mississippi River, the Spruce Pine has until recently been but little noticed. It was described by Walter more than 100 years ago, but for the next seventy years it escaped the attention of botanists, when it was rediscovered by Mr. H. W. Ravenel, most probably in the same district where it was found in the coast region of South Carolina by the first investigator of the flora of that state. Subsequently Dr. Mellichamp observed the tree in several other localities of the coast near the southern limits of the state. About ten years later it was found by Professor Hilgard in the south-western part of Mississippi on the banks of the Pearl River, then by M. A. Curtiss in Florida on the Chattachochee River; and the same year I traced its distribution through the eastern-gulf states to its western limit.

This Pine, generally known to the people of the country as the Spruce Pine, extends from the coast region of South Carolina just below the line of thirty-three degrees north latitude to the valley of the Pearl River, in Mississippi, to the latitude of thirty degrees thirty seconds, and is in that state as well as in Alabama confined to a belt of from 115 to 125 miles wide. It is found in dense woods with a soil of deep light loam rich in vegetable mould, retentive of moisture, but not wet, and particularly in situations where a more or less sandy subsoil favors a moderate under-drainage. Under the conditions of a mild climate, with an abundant rainfall, and a soil with a fair store of the elements of plant food, the forest-vegetation exhibits in greatest variety and luxuriance.

Here this Pine is found associated with magnificent Magnolias (*M. acuminata* and *M. macrophylla*), the Short-leaved Pine (*Pinus echinata*), the Red Bay (*Persea Carolinensis*), and almost unfailingly the Beech, with its dense foliage of freshest green during the earlier part of the season, standing forth in pleasing contrast with the dark, glistening leaves of the Magnolia and the sombre shades of the Pines. The variety of smaller trees and flowering shrubs adds to the charm and interest of the surroundings of this Pine, amongst them the Holly (*Ilex opaca*), Palmettos, the Farkelberry (*Vaccinium arboreum*), large, bush Huckleberries (*V. virgatum*), the Angelica-tree (*Aralia spinosa*), Red-flowering Buckeyes (*Æsculus Pavia*), Styraxes and Cornels, *Styrax grandiflora* and *Cornus sericea* being most conspicuous. These lands of a rich soil, and supporting such varied vegetation, called hummock lands, are most frequent in the coast region, where the streams emerge from the Pine-uplands to the plain or flatwoods fronting the sea-shore. The Spruce Pine is entirely wanting in the Pine-uplands or Pine-barrens proper, where the Long-leaved Pine forms exclusively the forest-growth. This last reappears again in the region of a mixed growth of coniferous and broad-leaved trees, forming in many parts the upper section of the coast Pine-belt, and extends not further to the northward than the Magnolia, the two trees following almost the same line in the northern limit of their distribution.

In Alabama and Mississippi the Spruce Pine is found singly or in groups of only a few individuals scattered in the localities favorable to its growth. In western Florida, between the Chocta-ha-chee and Chatta-ho-chee Rivers, it forms compact bodies of timber, extending over several acres, and in this region of its best development and greatest frequency its seedlings are found to occupy a prominent place amongst the second growth.

The Spruce Pine attains, on the average, a height between eighty and ninety feet, the tall, finely shaped, but gradually tapering trunk, from sixteen to twenty-four inches in diameter rising clear of limb for a height of fifty to sixty feet above the ground. In a rich hummock on the Tensas River, in Alabama, rising above the Cypress swamp, a magnificent specimen was observed, rivaling in height the mighty denizens of the lagoon below, considerably over 100 feet in height and fully ten feet in circumference breast high. The bark of the trees of larger size is thick, furrowed lengthwise, somewhat flaky, of reddish brown color, getting closer toward the top, and is perfectly smooth in the crown and limbs, like the bark of the younger trees. The limbs, rising slightly, divide into numerous horizontally spreading branches and branchlets, multiplied by numerous sprouts from adventitious buds, thus imparting to the oval-shaped crown a greater compactness than is found in any other of the Atlantic Pines. The tender shoots of the season are flaccid, as in the Scrub Pine (*P. inops*), and by this peculiarity during the earlier part of the season the tree is readily distinguished from the Short-leaved Pine (*P. echinata*), its frequent associate, which it resembles in foliage, inflorescence and fruit. The leaves of the Spruce Pine are from one and a half to three inches long, and three of them are always found in the short, close sheath; they are more slender than those of the Short-leaved Pine, scarcely half as thick as they are wide, dark green, contorted, and, later in the season, spreading, and are shed during the third year. Densely covering the numerous divisions of the branches, the foliage of this tree is closer than in any of its allied species.

The flowers appear during the later part of March. The lateral short-peduncled cones mature during the second season. They are ovate-oblong in shape, about two inches long and one inch in greatest diameter, and their flexible scales have a flat apophysis and small deciduous prickle, which, in the mature cones, is altogether wanting. This Pine is less urgent in its demands for light and air than most of its congeners. It eschews exposed situations, and it is only under the most favorable conditions, insuring the greatest rapidity of growth during the first stage of its existence, that it is found to prevail in the openings of the forest. It is through all stages of its development of quick and steady growth. Trees felled in Baldwin County, Alabama, showing forty-five and fifty rings of annual growth, measured eighty and eighty-five feet in height and seventeen to nineteen inches in diameter. The rate of increase is greatest during the first ten years, after which it appears to differ but slightly during periods of the same length of time. In one of the trees the space occupied by the first ten rings was found to be two and three-eighths inches wide, by the second ten rings one and seven-eighths, the third one and three-fourths wide, and the fourth one and a half inches wide. The annual rings showed but slight differences in their width. The heart-wood can hardly be distinguished from the sap-wood. Mr. Fillibert Roth, of the University of Michigan, who has given much attention to the investigation of the structure of the wood of our southern Pines, finds the proportion of spring wood to that formed of summer cells in one ring, on the average, as three to two, and in almost every detail the anatomy of the wood of this tree is remarkably similar to that of the Loblolly Pine (*P. Tæda*). The wood is light, only slightly resinous, straight-grained, splitting smoothly and satiny when finished, resembling the wood of the Spruce. It is not durable, is wanting in strength and elasticity, and is apt to shrink under exposure to the sun. Hence this rare and ornamental Pine is to be considered of little economic importance as a timber-tree.

Mobile. *Carl Mohr.*

Anthracnose or Blight of the Oak.

THE members of the genus Gliosporium are upon the increase in this country, so that at the present time there is an anthracnose of many of our plants, some of which are quite injurious to crops. Thus *G. fructigenum* is so destructive upon the fruit of the Apple that it has taken the common name of "bitter rot." *G. venetum* is the anthracnose of the Blackberry and Raspberry, often defoliating the plants infested. *G. ribis* in like manner preys upon the foliage of the Gooseberry and Currant, and *G. Potentillæ* is the anthracnose of the Strawberry-vines. Others still, as *G. lagenarium*, cause the anthracnose or "spot rot" of cucumbers and melons.

With these citations to indicate that the genus is a widespread and destructive one, attention is called to a species of Gliosporium that is becoming very conspicuous from its destructive work upon the leaves of the Oak. As early in the season as the last of May, the "burning" and coiling of the leaves upon some White Oak-trees near New Brunswick were so complete that one of two friends during a recent drive called my attention to the "scorched" trees and asked for the

reason, while the other quickly volunteered the supposed explanation that it must have been caused by a fire.

Upon a careful study of the subject it was found that the brown, curled and dead leaves had been attacked by a fungus of the genus Gliosporium. In the worse cases the whole leaf was brown, but in many others only a portion had been killed, and of the latter the injured areas were along the main veins in the centre. In other words, the fungus is most active near the centre veins, including the midrib of the leaf, and spore-bearing pustules are usually situated in quite uniform rows, one upon each side of the vein. This is different from any other species of Gliosporium, which prefer the soft parts of the leaf and bear the minute blisters or spore patches midway between the portions of the leaf's framework.

This blight upon the Oak proves to be *Gliosporium nervisequum*, and is therefore the same as the one that has proved very destructive to the Sycamore or Button Wood (*Platanus occidentalis*)—in fact, this blight was so violent upon the latter host that it has received consideration in the *Journal of Mycology*. In this it is stated by Miss Southworth that "in some cases trees have been killed outright by the disease and in many the growth of the early part of the year has been completely destroyed. . . . Sometimes the young unlignified stem was attacked at some distance from the end." Also that in early spring "the external leaves of the unfolded buds showed the disease as soon as they were half out and many buds died before they were fairly open." It would seem from this that the blight fungus remains through the winter in the substance of the bud, but possibly only as spores lodged in the folds of the bud, which quickly germinate as the bud begins to unfold in the spring. However this may be, the probabilities are that an Oak-tree once attacked will continue to suffer from year to year and therefore if certain trees show the blight conspicuously it would be wise to mark such for the axe.

This note is written for two purposes: first, to answer the question quite sure to be raised, namely: What is the matter with the "scorched" Oak-trees? and secondly, to point out that the enemy has proved a dangerous one to the Sycamore in many parts of the country, and therefore the affected Oaks, other things being equal, should be the first to fall before the axe, that the further spread of the destructive disease may be checked. It would be interesting to learn how widespread this trouble is the present season.

Rutgers College, N. J. *Byron D. Halsted.*

New or Little Known Plants.

Symphoricarpos occidentalis.*

THE North American genus Symphoricarpos is well known in gardens, where two of the species are cultivated as often, perhaps, as any of our native shrubs. These are the Snowberry (*S. racemosus*), which is valued for the snow-white berries which cluster along the branches, making a striking appearance in autumn and early winter; and the Coral-berry, or Indian Currant, as it is sometimes called (*S. vulgaris*), which is planted for the small dark red fruit which covers the branches in autumn. The flowers of these two plants, as well as of the other species of the genus, are small and not particularly conspicuous. Four or five species, in addition to the two generally cultivated, are found principally in the western and south-western parts of the United States and in Mexico. Little is known of these plants in gardens, although *S. occidentalis*, of which a figure from a drawing made by Mr. Faxon from the cultivated plant is published on page 297, has been grown for several years in the Arnold Arboretum.

Symphoricarpos occidentalis, like *S. racemosus* and *S. vulgaris*, belongs to Gray's first section, distinguished by the short and urceolate or campanulate corolla, generally less than a quarter of an inch long. It is a slender, graceful shrub, growing to a height of two or three feet, with rather stout terete stems covered with light brown bark. The leaves are oval or oblong, usually pointed and minutely apiculate at the apex, with entire or slightly sinuate margins. They are sometimes two or two and a half inches long and two inches broad, or often smaller, prominently reticulate veined, rather thick and leathery at maturity, and dull green on the upper, and pale on the lower surface, which is hairy along the mid-rib and primary veins. The axillary flower-clusters are sessile or nearly so, or are sometimes produced on stems an inch or more long, becoming spicate. The pedicels and calyx are minutely puberulous. The corolla is deeply five-cleft, pale rosy pink, densely villous hirsute with long hairs on the inner surface, and rather shorter than the stamens and style. The fruit is a quarter of an inch in diameter and pale greenish white at maturity.

Symphoricarpos occidentalis inhabits rocky, wooded banks from Michigan to the mountains of Colorado and Montana, extending far northward, where it was discovered by Richardson on the Franklin Relief Expedition.

It is the fruit alone which makes Symphoricarpos valuable as a garden plant, and as the fruit of this species is less beautiful than the larger and more clearly colored fruit of the Snowberry, it is not probable that it will ever supplant that species in popular estimation. Shrubs, however, which are hardy in this climate, and produce fruit which is showy in the late autumn, are not too abundant, and the Wolfberry, as this species is called in the Floras, makes an interesting addition to the list.

The plants in the Arboretum were raised from seed sent many years ago from Colorado by Mr. T. S. Brandegee. They are perfectly hardy, and receive no special care or cultivation, and produce seed every year. *C. S. S.*

*I.—Hooker, "Fl N. Am.," i., 285. Torrey & Gray, "Fl. N. Am.," ii., 4. Gray, "Syn. Fl.," ed. 2, 13.

Plant Note.

Hardy Trees and Shrubs.

THE issue of the *Gardeners' Chronicle* published on the 17th of May was largely devoted to hardy trees and shrubs with showy flowers, the subject of the discussion at the meeting of the Royal Horticultural Society held in London the previous week. It contained a figure of *Prunus Pseudo-Cerasus*, a Japanese tree, much cultivated in Japan, where innumerable double-flowered varieties have been produced. It is a small hardy tree, with clusters of large white flowers flushed with pink. It is sometimes known in gardens as *Prunus Sieboldii*. *Prunus Wateri*, a double pink-flowered variety, is one of the handsomest of the forms of this tree known in our gardens, and certainly one of the most beautiful early spring-flowering trees in cultivation. *Zenobia*, or, as we call it in this country, *Andromeda speciosa*, is also figured. It is the most beautiful plant of its class, and, although rarely seen in American gardens, one of the very best shrubs in cultivation. In spite of the fact that it is a native of the warm coast region from North Carolina southward, it is perfectly hardy as far north as New England. There are figures, too, of *Exochorda grandiflora*, and of *Magnolia stellata*, the dwarf Japanese shrub often found in our gardens under the incorrect name of *Magnolia Hallii*. This last is a very hardy and free-flowering plant, which only needs to be better known to earn the position in popular favor which its great merit deserves. *Berberis stenophylla* is also figured, and so are the European Amelanchier and *Olearia Gunniana*. The first is a very pretty hybrid between two South American species—*B. Darwini* and *B. empetrifolia*. It is a plant of neat habit, with small dark green leaves and brilliant golden colored flowers; not always perfectly hardy in the northern part of this country, although it will flower here if the branches are slightly protected during winter. *Olearia Gunniana* is one of the *Compositæ* from Tasmania, with pretty Aster-like white flowers, which are often seen in the early spring in London gardens, but here, like other Antipodean plants, it will not thrive when exposed to the vicissitudes of the climate of eastern America.

Cultural Department.

Raspberries.

RASPBERRY culture has attained such proportions that it is probably foremost among small fruits, both for home and for market use. The improvement in varieties was not defined and satisfactory until we secured the Cuthbert. But earlier sorts were in some respects superior to this standard. The Philadelphia was an enormous bearer and entirely hardy; but its color was a dull purplish red, and its quality, though excellent, not so good as that of several others. The Turner

was sent out by Professor Turner, the enthusiastic Indiana scholar. It was, and is yet, the best early berry; but if not closely cultivated, to prevent suckering, it is worse than useless. It is curious to contrast the superb berries and large crops on a row sharply hoed into hills and a row allowed to have its own way; on the latter you will get next to no fruit at all. I still believe in planting a moderate number of stools of these two sorts. The very best berry I ever tasted as well as finest to the eye, was the Pride of the Hudson, sent out by the late E. P. Roe; but it will not stand well in dry spots and is quite freaky every way. I plant a few yet for home use, but must select a half shaded, moist spot. Mr. Roe quickly refused to sell more of them.

Of purples, the first really good one was New Rochelle; and I advise any one to plant it yet for canning. The berry is not so large as Schaffers, but it is fine in flavor and enormously productive. The bush grows much like the black sorts, and it

Crimson Beauty are to be classed among the failures. Rancocas is not much better.

Of blacks I have very warm commendations yet for Davison's Thornless. This is a very early berry and good in quality. Its size is only medium and its bearing qualities not extraordinary; but it is thornless. I have seedlings from this sort that are some improvement on the parent. I suggest a good deal of effort to get seedlings from this stock until we get really the best. To get rid of the thorns in any branch of the Rose family is a matter of great importance. They are not needed under culture. We have discarded them from our Apples and Pears; we must also have thornless Raspberries.

Souhegan and Tyler are nearly alike and truly admirable. Gregg for late was a noble berry, but too tender. At present I plant, besides Davison, Palmer for early, Hilborn and Ada for later. I have very high expectations of Palmer, but have not much personal experience with it.

Fig. 42.—Symphoricarpos occidentalis.—See page 296.

roots at the tip. Schaffers kills back somewhat, but I always get good crops of large fruit. Where it does well it is a magnificent acquisition. These two purples far surpass the reds for canning, giving a superior flavor and more body.

Of the yellow varieties nothing was better than Brinckles Orange until Caroline was sent out. I am not so highly pleased with Golden Queen as some have expressed themselves; but it is a fine berry. For a near market the first is the best. It has no keeping quality. The value of yellow berries is mainly to secure something handsome by way of contrast with the red ones. For market, it is well to have one crate of yellow to ten of the reds and one or two of the purples.

We may wisely, I think, hold Cuthbert to be the main-stock red berry, adding Turner for early; for yellows planting mostly Golden Queen; and for purples New Rochelle and Schaffers. I have several other sorts on trial that may prove of high value. Marlboro is not a berry of high quality, but it may be advisable to plant it for early. Hansell and

For a small home garden select Turner and Cuthbert, Golden Queen, Schaffer, Davison and Palmer, and Hilborn.

The matter of culture is most important. Plant in the rows as close as you can; but keep your rows more than wide enough to cultivate with a horse. Set stakes every twenty feet and run one wire about four feet high. Tie the canes in bunches of two to four to the wires, with coarse hop twine. Tie tightly. Cut the canes back to six or seven feet. With wires you can grow them to that height safely and profitably. It is not an expensive plan, and the result is enormous crops. The high culture also prevents the need of cultivating the soil except in early spring.

Mulching is always good for everything, from Strawberries to Apple-trees; but the Raspberry likes a cool soil and an even temperature. The secret of success is mulching and wiring. But high culture so shades the soil as to prevent drying in ordinary seasons. The best mulch is sawdust.

I have a plan for growing red Raspberries in stools between

my Currant-bushes. Set rows of Currants and Raspberries alternate with Grapes and Strawberries. The Strawberries do not injure the Grapes and give a fair crop. The Raspberries do not injure the Currants if not grown too thickly. It is always easy with the hoe to keep red Raspberries within reasonable bounds.

The increased acreage of berries does not any more than keep up with the increase of demand; and it will not. About one-half of the experiments made are very temporary, as berry culture to be profitable must be clean. *E. P. Powell.*

Clinton, N. Y.

Notes on Trees and Shrubs.

THE Laburnums in the vicinity of Boston have been unusually laden with their bright yellow blossoms this season, even very small plants bearing flowers in profusion. The Laburnum is not quite hardy enough to give general satisfaction in this climate, and, to succeed at all, it requires a somewhat sheltered situation, and more particularly a dry, well drained soil—a poor soil on a dry bank being preferable to a rich and moist one where growth would be rank and continued late in the season. Another trouble with these plants in this latitude lies in the fact that the bark of the main stems is sometimes liable to become destroyed or blighted in winter if the plants are in a position where the direct heat of the sun strikes upon them. Similar injuries are not uncommonly produced in some tender varieties of Pear and other fruit-trees as well as some other of simply ornamental value. Consequently, it is noticeable that the Laburnums which do best are those on the north side of a group of other trees, or even partly under their shade, so that the stems are not subjected to sudden thawings from the direct rays of the sun in midwinter. Since the Laburnum is commonly used in Europe as a standard stock upon which to graft *Cytisus purpureus* and other allied hardy ornamental species, and these grafted plants are sometimes imported into our northern gardens, care should be given to provide some shade in winter for the tall, bare stems.

In striking contrast to the floriferous aspect of the Laburnums is the barrenness of the Yellow-Wood-trees (*Cladrastis lutea*) this season. In all sorts of situations, as under high cultivation or growing on lawns, these trees are entirely without flowers. This species usually blooms regularly every year, and its behavior this season is unaccountable, because the last year's growth was vigorous and healthy and was not injured in the slightest degree during the past winter. The Locusts, however, are as full of bloom as usual. The hardiness of the Yellow-Wood and its hitherto general freedom from insect attacks and other diseases, seem to make it worth testing as a stock upon which to graft other species and varieties of the Pea family. In this country, when the Locust is used as a stock, the stems are often rendered almost worthless in a short time by the attacks of boring larvæ of several species of insects.

The Chinese *Deutzia parviflora*, of which an illustration appeared in the first volume of Garden and Forest (p. 365), has flowered as profusely as usual this season, and seems to be quite as hardy as *D. scabra* or *D. Sieboldiana* when growing under the same conditions. The tips of the branches are sometimes destroyed in winter, but the injury is rarely so severe as to seriously affect the blossoming. The flowers appear somewhat earlier than those of the hardy, common *D. gracilis*, and they fade away before the last species has passed its period of greatest beauty. The flowers of *D. parviflora* are very different in appearance from those of any other Deutzia in cultivation, although they may not surpass some of them in beauty and interest. While they would properly be described as white, the flowers of this species, when compared with those of *D. gracilis*, have not the pure snowy whiteness of the latter, but are slightly tinged creamy white, in some cases as deeply as the blossoms of *Philadelphus coronarius*, the most common "Syringa" or Mock Orange of our gardens. The flowers are prettily arranged in large corymbs, and they are as interesting when closely examined as when seen at a distance on the plants. They are of very uniform size on any plant, but on different plants they vary from a little over a third to over half an inch across. They are flat, with rounded petals, in general appearance resembling small Hawthorn blossoms more than any other familiar object. The fragrance, also, is strongly suggestive of the Hawthorn, though not so intense. *D. parviflora* is a stiff, upright growing plant, which attains a height of six or eight feet about Boston; and the flower-bearing branchlets are also rigidly erect and not flexuous. This species appears to be very rare in cultivation, but is likely to be much advertised in the near future. The variations noticeable in the size and color of the flowers of seedling plants indicate that the species is capable of much improvement by selection and cultivation. Seed is produced on the plants here, and any peculiar form which may arise can be easily propagated by cuttings of ripe wood taken in the autumn or winter, or by green cuttings from the plants in June and July.

Arnold Arboretum. *J. G. Jack.*

Notes on American Plants.

Brodiæa multiflora, from the Pacific coast, bears a close, round umbel of sessile, bluish purple flowers half an inch wide. But they are so close together that they have a different appearance from most of the Brodiæas. The long naked stems grow about twenty inches high from a bulbous root, and the leaf is long and grass-like. It is a strong-growing species, but should be protected in winter.

Iris longipetala, from Oregon, blooms about the same time as our common *I. versicolor*. Its leaf is long and narrow, and the stem, usually two-flowered, is almost naked, a foot or more high. The flower is a trifle smaller and paler than that of *I. versicolor*, but a casual observer might think it the same if he did not compare the leaves of the two. It needs at least two years to become thoroughly established, and then it makes a pretty plant. The flowers are useful for bouquets.

Lilium parvum and *L. Columbianum* are both from the Pacific coast, and come into flower about the same time with the first of the Lilies. The former is a California plant, while the latter comes from the vicinity of the Columbia River, in Oregon and Washington. Both have reddish yellow flowers, with dark red spots in the centre, but the divisions of the flower turn back in *L. Columbianum*, which gives the flowers a different appearance. *L. parvum* seems to thrive best in a light loamy soil, while *L. Columbianum* needs a heavier clay loam or a mixture of clay. The leaf of the latter seems to dry up and die even before it is in bloom when set in a light soil. Both species have small flowers, but they are a little more numerous in *L. Columbianum*, and the plant is a third taller than the other.

Vancouveria hexandra is now in flower, and is a charming little plant. Its delicate dark green foliage, which in color and appearance somewhat resembles that of *Thalictrum anemonoides*, would alone make it worth growing. But the small waxen-white flowers, on long stems in a loose raceme, are delicate and pretty, peculiar in shape and valuable for cutting. It needs time to become established, but it soon spreads from underground stems and forms dense beds. It does fairly well in the open sun, but our plants that are placed in a thin shade do the best.

Allium falcatum, from Oregon, grows only four inches high, but its umbel of dark rose-purple flowers is very large for its height. The flowers are about half an inch wide. The divisions of the flower are very narrow, which gives it an odd appearance. Its very short stems make it worthless for cutting, but it is an interesting garden plant, remaining a long time in flower. It is probably not hardy.

Mimulus Lewisii, another native of Oregon, a foot or more high, has numerous crimson flowers, an inch long and nearly as wide at the mouth of the flower, very showy and durable. Open sunlight and a light soil seem to suit it.

Southwick, Mass. *F. H. Horsford.*

Hardy Flowers in June.

APRIL and May are the brightest months in the rock garden, when Moss Pinks (*Phlox subulata*) in variety, Aubrietias, Arabis and Hepaticas are at their best. June is the brightest for the borders. Columbines are among the earliest and most beautiful, I think, of all border plants; and the handsomest of these is the Siberian species, *Aquilegia glandulosa*. It is quoted at high prices by dealers, but it is very easy to raise. There is some question as to the probability of obtaining the species true; but there should be little danger of its becoming hybridized, as it is nearly past blooming when the other species come in, with the exception of *A. Canadensis*, which does not seem to affect it. My plants from seed saved by myself are perfectly true. One-year-old seedlings bloom better than the best imported plants. This may be accounted for partly by the fact that all Columbines are impatient of removal. In our case they suffer very little from it, being removed from the nursery directly into the border.

The hybrids between *A. cærulea* and *A. chrysantha* are beautiful, having the graceful curving spurs so well developed in Chrysantha. The blue and yellow varying in lighter and deeper shades harmonize splendidly. The "Munstead

Giant," a white variety of *A. vulgaris*, is a very attractive border plant, and being of robust constitution is not so likely to die out as some of the more delicate kinds. Another bold kind is *A. Olympica*, with flowers of a lovely violet-blue.

Moutan Pæonies and German Iris, and later, herbaceous Pæonies follow. Any one wanting a gorgeous effect lasting through June can have nothing better than these with Sweet Williams mixed in. *Pæonia tenuifolia*, single and double, are striking and distinct, and very early. All the single varieties are handsome. They are easily obtained by sowing seed saved from the ordinary double varieties, about half of which come single or semi-double from seed. A friend tells me germination is assisted by soaking the seeds two weeks before sowing.

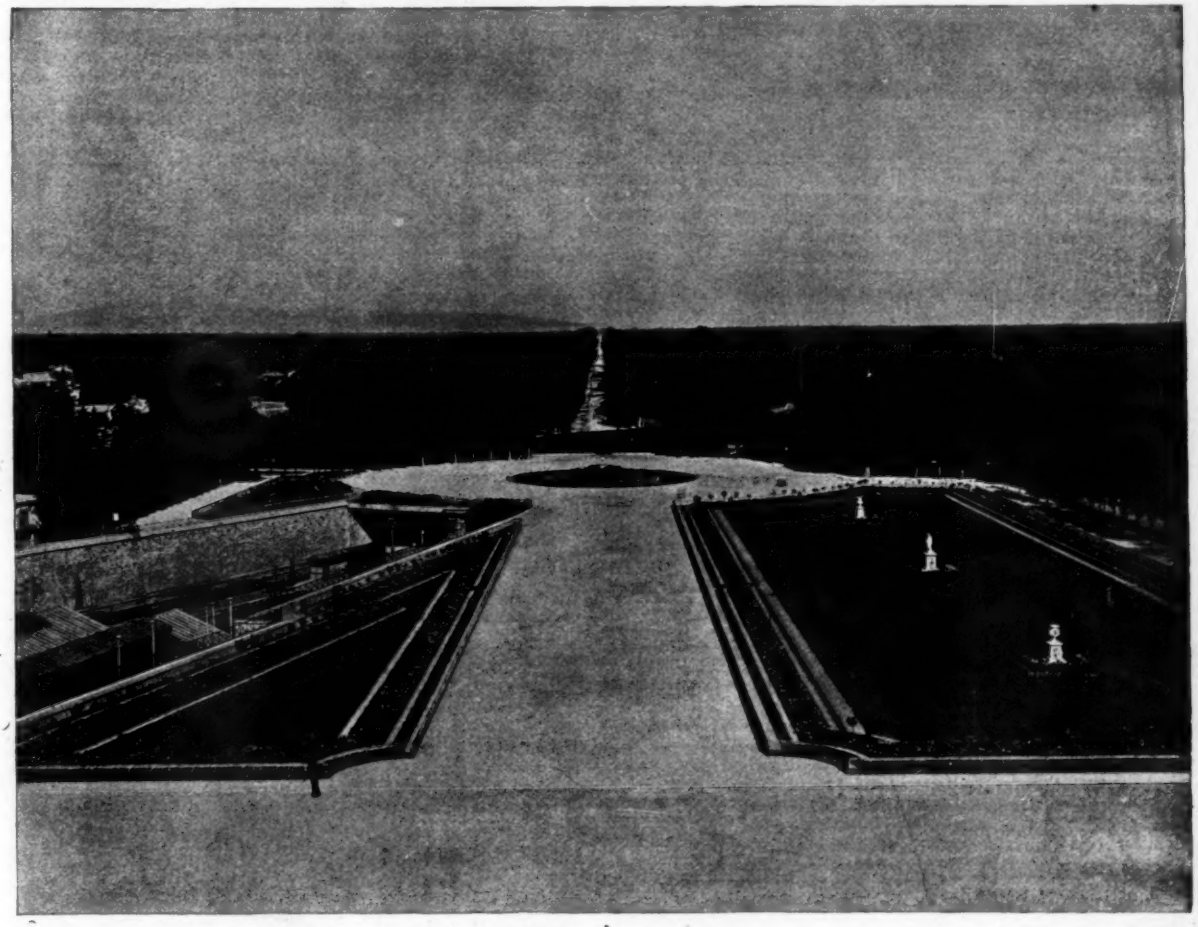
After these come Foxgloves. They are strikingly beautiful. We formerly protected them during the winter, but this season they have taken care of themselves in the shrubbery border, where they appear to be at home. The yellow-flowered species, *Digitalis ambigua*, is a distinct and attractive plant, and seems to be hardier than *D. purpurea*, the common kind.

The month finishes with Sweet Williams and Delphiniums at their best. Selection does considerable with these perennial Larkspurs. We have now some very fine double ones. I saved seeds from a lovely sky-blue flowered variety named Belladonna, which I am told never produces seed, and if so my plant must have been wrongly named, though trusting to memory I should say it was true enough. By hybridizing this with the old *D. formosum* I have some very fine distinct kinds and a few very double ones. No other plants furnish so wide a range of blue, from the palest to the most intense, as do these perennial Larkspurs. If they are cut back as the flowers fade, another crop of bloom will appear, so that they will brighten the border until autumn.

Wellesley, Mass. *T. D. H.*

Novelties in Hardy Plants.

THE new Carnation, Paul Engelheart, is without question the best border Carnation of the Clove section yet introduced. The color is the same as in the old Crimson Clove, but the flowers are almost twice the size, and, if possible, more fragrant than those of that good old garden plant. The great advantage claimed for Paul Engelheart is that the stems are stout and well able to support the large flowers, and this is so even when cultivated under glass. I am not positive that this Carnation is thoroughly hardy, but there is every reason to believe it will prove to be as hardy as all others of its class—that is, with a little dry litter placed round the plants in fall. With this treatment the Scotch Pinks generally winter nicely even in exposed situations, and furnish an abundance of beautiful, fragrant flowers in June.



Parterres in the Park of Saint Germain.—See page 294.

Of the two scarlet Delphiniums, *D. cardinale* and *D. nudicaule*, the latter is the best plant, being a better perennial than the former, but both are desirable owing to the quality of flowers they produce, the brilliance of their scarlet color, a color by no means common among hardy perennials, and the neat dwarf habit of the plants and their branching habit, which make them desirable for the front rows of flower-borders. Among recent novelties is an orange-colored variety of *D. nudicaule*, called Aurantiacum. This is fully as good a plant as the type, and differs from it only in the color of the flowers, which are of the brightest orange. These scarlet Larkspurs are often accused of being tender and only biennial in duration, but it is easy to raise them from seed, for the seeds germinate as readily as those of the old *D. Chinensis*, and it is surprising what an amount of satisfaction one derives from the fact of doing a plant well when it has a reputation for being hard to grow, especially when the subjects have a special beauty of their own as is the case with these scarlet Larkspurs.

I took occasion in a late number to advocate the cultivation of Alstromerias. Since those notes were written it has been our good fortune to flower the gem of the family *Alstromeria pelegrina alba*, the Lily of the Incas. This plant is far too rare in gardens even in the old world, and the only reason there can be for its not becoming more common is that so few have an idea of its exquisite beauty. In stature this species does not exceed eighteen inches, and the flowers are pure white, with a few spots of green in the throat, giving it a chaste beauty only to be compared to that of an Orchid. There is reason to believe that the Lily of the Incas will prove tender in the colder states, and it certainly would be unwise to risk a unique plant the first season, as it might be easily and safely wintered in a cool cellar and replanted in spring. The raising of Alstromerias from seed is easy, provided fresh seed can be obtained. Old seed often takes two years to germinate, and the seeds should be sown and kept under glass, since the plants are peculiar to South America. Our plants were received in the fall and were potted and kept dry until signs of growth were visible, when water was sparingly applied until spring, when flower buds were produced, and in May there were many umbels of the beautiful white flowers expanded, the plants promising to flower all summer, this being the way all the other species have behaved that we have tried.

Reading, Mass. *E. O. Orpet.*

Odontoglossum maculatum.—During March, April and May one may begin to look among the Odontoglossums for the flower-spikes of this attractive species, although I have seen plants in flower in December and January also. The pseudobulbs are ovoid, much compressed, each furnished on the summit with a broad, grassy green leaf six to nine inches long, and distinctly veined longitudinally. The flowers, which vary in size, are usually two to three inches across, and are borne on pedicels about four inches long, clasped at the base by a large pale brown bract. The sepals are lanceolate-acute, sharply keeled behind, with a corresponding depression in front, the color of which is a very dark brown, with a few obscure pale green transverse markings at the base. In comparison, the petals are broader and shorter, oblong-ovate acute, suddenly narrowed at the base, and of a clear yellow color, heavily blotched on the lower half with dark brown. The lip is cordate-acute, with a jagged margin; it is yellow, like the petals, and covered with deep brown blotches, which stand out in bold relief against the ground color. The callus, or crest, is of a deeper yellow, with brown lines at the sides, and is something like that of *O. Rossii*, but has a central ridge dividing into two horns in front.

O. maculatum was discovered many years ago by La Llave & Lexarza in Mexico in the neighborhood of the Irapean Mountains, near Vallodolid, but its first appearance in cultivation was due to Mr. Barker, of Birmingham, in whose collection it flowered for the first time about the year 1845. It has been largely imported since that time, and is now one of the best known Odontoglots. A closely allied species is *O. cordatum*, also a Mexican plant, with which, in years gone by, *O. maculatum* was confused. *O. cordatum* may, however, be readily distinguished by its longer, narrower and more acuminate sepals, petals and lip, shorter pedicels and looser habit.

Pot cultivation seems to be the most suitable for *O. maculatum*, and a temperature varying from sixty to sixty-five degrees Fahr. in winter to seventy to seventy-five in summer. During growth water may be freely given, as well as enough air to enable the growths to ripen properly. The pots, of course, must be well drained with clean crocks, and the soil should be the usual compost of fibrous peat and sphagnum, in about equal proportions.

Salvia Splendens, Ingénieur Clavenad, is in bloom from seed planted in January. This variety was first offered this season, and, as will be seen, is rather earlier and blooms in a smaller state than the type, and the cluster of flowers is, perhaps, larger. The color is a bright scarlet, and it will probably prove valuable for early flowers.

Delphinium Nudicaule, var. Auriantiacum, is a new variety, probably not yet much distributed. Its habit is like the type, dwarf and compact; probably it will prove equally unreliable as a garden-flower. The flowers are small, of a pleasing reddish orange shade, and numerous. A very distinct plant for a collection, but very inconspicuous in comparison with the numerous very beautiful hybrids now in cultivation, than which there are few more pleasing and satisfactory plants for a large border.

Dianthus plumarius hyb.—There seems to have been little attention paid to this cross between *D. plumarius* and Carnation remontant, made by M. Alegataire, of Lyons, a few years since. As the plants in their second year, in a bad spot in the border, prove to have a very sound constitution, it seems well to call attention to the hybrid, as some skillful cultivator may find it well to take it in hand and improve the flowers, which at present are single or semi-double and rather dull colored, though fragrant. It is a free grower with long stems, with a great flush of bloom in June and scattering flowers during the summer.

Elizabeth, N. J. *G.*

Abutilons.—In connection with Dr. Masters' interesting article on "Sports" may be mentioned the peculiar action of stock on cion in the case of Abutilons. On a well-variegated form of *A. Thompsoni* were budded four varieties with green leaves. A yellow-flowered one took the variegation completely, and cuttings have retained it for two years. A strong variety with large, bell-shaped, red and orange-veined flowers took the variegation at first, and afterward lost it. One variety with pink flowers and cordate leaves showed no markings on the leaves; and the other with spreading, orange-striped flowers showed less than the stock, but was still decidedly variegated. The variegated form of *A. megapotamicum* will turn green on a green stock, and will show variegation on stock of variegated kinds.

Wellesley, Mass. *H.*

Correspondence.

Gardens for Hardy Plants.

To the Editor of Garden and Forest:

Sir.—The interesting editorial on the Spring Garden in your issue of May 7th suggests a few thoughts on the cultivation of hardy plants in small gardens, where they are too often entirely lacking or represented possibly by a stray Phlox, Iris, Peony, or other strong growing plant, whose growth is so apparent in the early spring that it passes safely through the annual tidying up. During May one will observe that the average small garden, so-called, is an expanse of bare earth nicely raked over and waiting for warmth and the plunging of such tender plants as have survived in-door culture. One notices these plants later in various stages of surprised discouragement at the sudden change to fresh air and their slow progress to health and vigor. Where new plants are purchased annually it is a little better, but even then a good part of the growing season is over before the garden is fairly filled with foliage and flowers. Without intending any depreciation of tender and bedding plants, be they ever so common or commonplace, it does seem that one who is fond of a garden or enjoys country life misses much if he pursues year after year the old routine with such plants for the very short season from the middle of May to early October, when by a judicious selection the garden may be made a pleasure from April 1st to late November; and even longer in some seasons like the present, where flowers have not been wanting in some gardens since early January. By all means retain the old favorites; but why not secure a selection of long-lived plants which will invest the garden with an increasing charm every year, and then with the addition of a few good annuals the garden can be made interesting always, and to furnish great quantities of flowers for a long season. To get a garden of this character into a satisfactory condition requires study and time, and unless one has an inherent fondness for the work and some patience, it is not advisable to begin without the aid of a skilled gardener. But assuming that no such assistance is practicable, how shall one entirely unfamiliar with hardy plants who finds himself in possession of a small garden proceed to collect and grow hardy plants satisfactorily? This is too large a question for a brief reply. Perhaps a few notes from the standpoint of an amateur who has found in a small garden a pleasant relaxation during the few leisure hours of a busy life may be helpful.

The proper time to start such a garden is now, or any time when the borders may be dug. Do not be over ambitious at first or make such elaborate plans that discouragement will follow a lack of immediate success, but have a space or spaces in different parts of the garden deeply dug and loosened and add a fair amount of manure after taking care that the drainage is perfect, for the hardy-plant border, as a whole, should never again be disturbed. The more or less unreliable laboring men (not to dignify them by the name of gardeners), whom cultivators of small places are forced to employ, have so long annually upset every available bit of ground and ruined all perennial roots that it seems to have become a tradition that such a course is the only proper one. A slight

consideration will show that such a practice destroys all hope of satisfactory effects. If the border is well drained and well filled with plants and their roots, any deep disturbance of the ground must work some injury to them. The only possible excuse for disturbance would be that the soil might become sour if not stirred, but it will not grow sour if drained and full of growing roots, as a slight inspection of any bit of wild land will prove. Then this upsetting in the spring disturbs the seeds which naturally fall in the borders, many of which will germinate and prove useful in furnishing new plants for the border or for friends. One is also apt to have some favorite hardy annuals in the border, and one of the pleasures of spring is the annual appearance of these old friends from self-sown seeds, which usually produce strong, healthy plants. Advantage may be taken of the shifting or division of plants to lighten up the soil, and at convenient times during summer manure may be spread on the border if necessary to keep ground in good heart. It is also a good plan when dibbling out seedlings after watering to give them a slight mulch of well rotted manure, which saves much attention, helps to keep them clean and gives them a good start. An excellent position for a hardy border, and one often available in a small garden, is on the north side of a picket fence. In summer this shades the plants slightly, if at all, and during winter and early spring, when sun is low, shades them enough to prevent constant thawing and freezing, which is so fatal to many plants.

One who devotes himself to hardy perennials is necessarily forehanded, as plants are not to be had fully grown and in flower, and planting must anticipate flowering for some months usually. Where taste differs so much it is hard to advise as to the selection of plants, but probably the satisfactory plan for most novices would be to concentrate their efforts and select the more showy and free-growing plants, not trying for a general assortment, but for a fair number of certain families, so that during the season successive displays could be secured—accentuating the season, as it were—in different parts of the garden. Such selections, to name only common plants of a showy character in about the order of their blooming, would be Primulas, Daffodils, Dutch bulbs (Tulips, etc.), Columbines, Irises, Peonies, Poppies, Pyrethrums, Larkspurs, Hollyhocks, Sunflowers, Perennial Asters and Chrysanthemums. This list is a very short one, yet, if one were so disposed, he could find interesting occupation in collecting plants of only one of the families named. A small garden would scarcely contain specimens of all the various Irises, for example, numbering up to the hundreds, which may be had; and so with Primulas and others. Collecting, however, is one of the refinements of gardening which may be deferred until experience is gained. For a beginner it might prove more expensive than satisfactory. At first, it is well to acquire some knowledge of the various families and buy only plants which are likely to suit one's special taste, bearing in mind always that nurserymen's prices are no indication of the beauty of their flowers, except that for a beginner the cheapest are usually the very best, having been in cultivation a long while and found worth growing in quantity. One is apt to find, on growing a new plant, that the insect specially fond of it will quickly appear to claim his tribute, so the fancier whose taste is turned toward one family of plants finds that some enterprising florist manages every season to furnish a few new things exactly in that line, and he is assessed for an unending tribute. However, as man is a collecting animal, this is a very pleasant feature of gardening, and with as much of the excitement and as few annoyances as any of the usual fads. Many unkind things are said of the nurserymen, very unjustly, in connection with their offering of new plants, but usually by buyers entirely ignorant of flowers. No doubt, there are dishonest dealers who coolly advertise plants as belonging to a genus with which they are not even remotely connected, but it is usually the buyer's fault if he is deceived. One soon learns to neglect plants which will not please one's special taste, and yet almost any plant will prove of interest if it belongs to a family of which a collection is being made.

The heart of any garden is the seed frame, for from seeds one may raise most plants desired in quantity and it is an unfailing pleasure to watch them in all stages. The frame should occupy a sheltered spot and be covered with glass in winter and "shading" or slats in summer, and attention should be given to watering when necessary. In such a frame seed can be sown at any time it can be secured. Many seeds of hardy plants will germinate at once, some not for months, some only after warmth and some after freezing; so do not be in a hurry to disturb the seed-bed if plants do not soon appear. As to culture, one of the first discoveries the novice makes in a garden is that plants usually grow well—if you let them. In good soil none of the popular plants are likely to prove difficult subjects to grow and one soon learns to note quickly any lack of vigor or health by the appearance of the foliage, which some simple remedy will set right. It is probably agreed that gardening is an empirical art and with our present knowledge of plant structure it is almost impossible to say without experiment under what conditions most plants will not live and thrive to a certain extent. Like man, certain of them have an adaptability to changed surroundings, though there seems no general rule for this. The Flag Iris of our swamps is usually found with its feet in water, yet it is an excellent plant for a dry border; remove a Lily pad from its floating home and the first sun shrivels it. Perhaps the best cultural directions can be found in such works as Canon Hole's "Book about Roses," in G. H. Ellwanger's "The Garden's Story," John Burrough's sketches, Alphonse Karr's "A Tour Round My Garden," and other books which inspire a love of nature and present pleasing pictures which one would wish to develop in a garden.

One should try to have his grounds filled with plants, leaving them as far as possible to their natural habits, crowded artfully that they do not smother each other, avoiding stiff, formal arrangements and leaving the culture of specimen plants to professionals, for the ultimate pleasure of the work is the cutting and distribution of the flowers and plants. Consider no flower too rare for a friend, and always let a liberal supply of stems and foliage accompany the gift—it is better to spoil a plant than a bouquet, in which one's reputation for taste is at stake.

Every owner of a garden should bear in mind those words from Alphonse Karr, "I do my utmost to spread and render common and vulgar all the plants and trees that I prefer; it is as if I multiplied the pleasure and the charms of beholding them of all who, like me, really love flowers for their splendor, their grace, and their perfume."

Elizabeth, N. J. *J. N. G.*

Orchids in Flower at Wellesley, Massachusetts.

To the Editor of GARDEN AND FOREST:

Sir.—In the large conservatory connected with H. H. Hunnewell's residence at Wellesley, a fine display of Orchids in full bloom has recently been arranged in a very effective way. Just now the Cattleyas form the prominent feature, and many of the plants are remarkable for vigor and abundance of bloom. Among them I lately saw at least twenty-five examples of the beautiful *C. gigas*, many carrying several spikes each, and the blossoms were noteworthy for their size and coloring. A plant of the true variety, Sanderiana, measured nine and a half inches across, the sepals and petals being broad, the lip intensely rich, and the two eye-like blotches on either side of the brightest golden yellow. *Cattleya Mossiæ* was also well represented; in some varieties I observed the purple coloring in the lip of the large flowers almost absent, and replaced by a blotch of rich yellow. *C. Mendelii* here had produced some fine varieties with round, well-shaped flowers, the broad-fringed lips being invariably very dark. *C. Gaskelliana*, too, with its showy and fragrant blossoms, was flowering very abundantly. Among this group of plants were scattered several distinct varieties of *Lælia purpurata*, all large, well grown plants, and a fine example of the variety Alba carried several large, broad-petaled blossoms.

The rare *L. grandis*, with its buff-yellow sepals and petals and finely marked lip, was represented by a plant carrying three good-sized flowers. These were arranged together with a group of well-flowered *Odontoglossum vexillarium*. The plants were clean, strong and healthy, and were carrying six to eight flowers on a stem, and showing decided variations in color, from warm purple to a delicate white. A plant of the scarce variety Cobbianum, with flowers almost white, was very attractive. Some fine examples of the pretty *Oncidium Weltonii* had strong, well-branched spikes laden with quantities of bright olive-brown and purple flowers. The white and purple flowering *Odontoglossum cirrhosum* produced a charming effect, arranged with their long stems hanging gracefully among the flowers of the Cattleyas. Many Dendrobiums, too, were flowering freely. At least a dozen plants of *D. thyrsiflorum* were carrying three or four spikes each, and one specimen showed nine well developed clusters of its white and orange flowers. *D. Devonianum* hung from the roof, with a mass of flowers, on bulbs measuring three feet in length. A plant of Woolley's variety of *Sobralia macrantha* gave added interest to the group just named, its rich color blending harmoniously with that of the other flowers. Many examples of the beautiful *Odontoglossum crispum*, *O. Pescatorei* and *O.*

citrosmum added to the display, with fine specimens of *Cypripedium grande, C. caudatum, C. barbatum* and its variety, *C. Warrenii, C. Haynaldianum, C. Veitchii* and other excellent plants. *A. Dimmock.*

The American Association of Nurserymen.

Fifteenth Annual Meeting—II.

ABSTRACTS of a few more of the papers read at the Convention of Nurserymen in this city are given below. It is a matter of regret that our limits as to space will not permit us to quote them more fully.

THE RELATION OF NURSERYMEN TO THE FORESTRY PROBLEM.

The general ideas involved in the forestry problem are well known. There are two phases of it—the one which is concerned with bringing about a more rational management of our existing natural forests; the other, which contemplates the need of creating artificial forests.

With the first part of the problem—the application of forestry or forest-management to the virgin woodlands—the nurseryman has a connection only in so far as he, like every other citizen, should take an interest in a rational development of the resources of our country. Of this interest it needs only to be stated that the forest-property, which we hold in common, the so-called Government timber-lands, are annually decimated by fire and theft at the rate of from $10,000,000 to $20,000,000 worth, for lack of proper administration; that under present methods of lumbering not only are forest-supplies squandered in an unintelligent manner, but the natural reforestation which would, under rational methods, take place, is, on large areas, made precarious or impossible; that the White Pine of the north is fast disappearing without reforesting itself to any extent; that several specially valuable timbers, like the Walnut and the Ash, are growing scarcer every year; that, by the denudation of slopes, by removing the forest and burning off the forest-floor, in many sections the soil is washed away, the water-flow is made uncertain, giving rise to excessive local floods and low water. In short, the lack of a rational forest-policy is apparent on every hand, and, as citizens, nurserymen ought to take an interest in changing the state of affairs.

In one way the nurseryman can exert by his knowledge and through his connection with arboriculture a special influence. One of the means employed by the forestry reformers to pave the way for a better forest-policy is the establishment of Arbor Days in all the states; now thirty-six states have such Arbor Days; we are ripe for a National Arbor Day. The idea of Arbor Day is not so much to increase the tree-growth of the country as to create, especially among the younger generation, a spirit of conservatism in opposition to the destructive spirit of the wood-chopper, a love for trees and a knowledge of their value. The nurseryman, with his knowledge of tree-growth, can aid and advance this reform work considerably by his advice. He can do more. He can assist by being present at the Arbor Day celebrations and show the ignorant how to handle a tree. He can do still more, if he is generously inclined, like Mr. George C. Roeding, of Fresno County, California, who furnishes this year on Arbor Day to every school district in his county, free of charge, two Maples, one Texas Umbrella-tree, two Fig-trees, one Pear-tree, one Locust-tree, two Olive-trees, one Fan Palm and two Rose-bushes. This is well directed generosity, and it is only necessary to promulgate the idea to have it generally appreciated by other generous nurserymen.

A more intimate relation of the nurseryman exists to the second part of the forestry question, the creation of new forests. Here his business interest comes into play more directly, and he becomes a more important factor in the forestry problem. In the old countries forestry began with the management of the natural woods, and when it became necessary to recuperate these by artificial planting or to create new forests, the forester grew his own material and planted it himself according to his knowledge of forest-conditions. It is questionable whether of the four to five million dollars which Germany spends annually for artificial planting an appreciable amount goes to nurserymen for plant-material, most of which is grown by the foresters themselves. Lately, however, some few large nurseries make quite a trade in supplying forest-tree seedlings and seeds.

In the United States this is quite different. Forests under management do not exist; forestry as a profession and foresters do not exist as yet, and the nurseryman not only furnishes the plant-material, but gives advice or even does the planting himself under contract. Upon him rests largely the responsibility whether this phase of the forestry problem shall be successfully solved, or whether its forest-planting become soon a well established practice, wherever needed, or whether its solution shall be kept back and failures be more frequent than successes.

There is no need of discussing the question, whether, so far, nurserymen have discharged this responsibility successfully; whether, considering the novelty of conditions, absence of experience and the many other difficulties attending this, to them, new departure in arboriculture, they have done the best they could; nor is this the occasion to inquire to what extent forest-planting is practiced or to criticise defective measures or even to propose new methods. Every one who is familiar with the subject knows that, greatly as the practice of planting to forest has increased of late, a much greater increase is necessary to make a visible impression upon the treeless plains of the west, and still more so to recuperate the waste lands in the east, and to fill the gap made by the lumbermen in the north. Such enterprising men as Robert Douglas, Thomas Meehan and your first Vice-President, Mr. C. J. Carpenter, deserve public gratitude for what they have already done, and, no doubt, others are prepared to do as much; and yet it may be worth while to outline a few points for every nurseryman to consider when he contemplates any efforts in the line of forestry.

In the first place, he should recognize that forest-planting has a different object in view from the planting for which nurserymen have been and are most of them now accustomed to supply trees.

In the latter case it is beautiful form, shady or brilliant foliage, and, above all, it is the single tree he has to deal with. In forest-planting the ultimate object is timber and continued protection against climatic ills. Here he deals with masses, not with individuals. With the change of object, a change of method necessarily follows. What is right and proper in the selection of material and its disposition by the landscape-gardner, is not proper for the forest-planter.

The nurseryman, then, who undertakes to advise on forestry matters, cannot do so purely from his knowledge of the behavior of trees in open grounds and along road-sides, but he must have studied their behavior in the forest; he must have studied, at least, the principles of forestry; he must know by what means forestry, as a science, utilizes the behavior of different trees in combination, so as to produce desirable forest-growths and forest-effects in the cheapest manner and in the shortest time, imitating nature and yet improving upon her from the economical point of view. One of the principles which is well developed and established by the experience of European foresters is little understood among our forest-planters. This is the superiority not only of dense planting, but of mixed planting and grouping over the method of planting one species by itself. Yet it is not so much variety and promiscuity that is desired as some seem to think; there are much more rational objects to be served by such mixing and grouping. There must be a reason for the choice of a combination and a system in the arrangement, which is conscious of its object. Favorable forest-conditions are to be established as the first aim of the forest-planter, and these, as we find them in the best natural forest, consist in dense growth, mixed growth, undergrowth. By so much as any of these conditions is deficient or lacking, by so much is the forest short of the ideal.

In the selection of the species to be grouped, besides the capabilities of the same to thrive in this locality and soil-conditions and to yield the most desirable wood material, three points must guide the planter: (1) Their relative capacity for preserving and increasing favorable soil-conditions; (2) Their relative dependence for development on light and shade; (3) Their relative rate of height-growth. Without tracing at length the meaning of these points in particular, it may be stated as a consequence of their consideration that there are five principal rules to be kept in view in making selections for grouping:

I. The main growth, i. e., the one that occupies the larger part of the ground, must be of a kind that improves soil-conditions, namely, a densely foliaged, shade-enduring kind, which does not lose its shading capacity with age.

II. Shade-enduring (i. e., densely foliaged) kinds may be grouped together, if the slower grower will endure the shade of the rapid grower, or can be protected against its supremacy by being planted in larger specimens or in advance of the former, or in larger numbers; or if its gradual killing out after it has served its function of soil cover is not objected to.

III. Light-needing, i. e., thinly foliaged kinds, should never be grouped together where soil-humidity is to be preserved, unless no shady tree can be found to fit the locality.

IV. In grouping light-needing with shade-enduring kinds, the former must be the more rapid growers or must otherwise be given an advantage.

V. The mixing in of the light-foliaged trees is preferable, done in single individuals and not in groups, unless special soil-conditions necessitate the latter method.

The last, and perhaps the most vital relation of the nurseryman to the forestry problem after his generous tendencies and communal interest have been touched, is one that touches his money interest.

The nurseryman furnishes the plant-material to the would-be forest-planter. What grave consequences does this have upon the success of the plantation! If honest service is of utmost importance to the producer of an annual crop, how much more must it be with a crop which matures only after many years! All the arguments for pure seed, fresh seed and seed true to name apply, of course, to the furnisher of forest-tree seeds and of plants as well, and more. The man who sells seedlings pulled from the forest for nursery-stock stands on the same plane with the man who sells oleomargarine for butter, or with any other fraud.

Buyers of ornamental stock spend their surplus for their pleasure; whether they pay a little more or a little less is in the end of not much consequence to them; they can readily allow an extra profit, since they themselves thereby suffer but little. The man who buys stock for forest-planting does so because of necessity, if he be on the naked prairie, or for profit. He cannot afford to pay more than the reasonable profit for what he buys.

Forestry, especially, which yields returns only after many years of investment, cannot afford to carry high initial expenditures on which to pay interest. The profitableness of forestry, any how, is a matter over which enthusiasts are apt to rave, judging from the results of some isolated and favorably conditioned cases, but which, when taken at large, cannot be so readily proved. Like any other legitimate business of a general nature, which is not capable of monopoly, it requires close calculation to make it a financial success. In a contract of a Nebraska nurseryman, who makes a practice of planting timber claims, the amount paid out for plant-material is forty per cent. of total cost of planting. (In Germany the plant-material costs thirty-four to forty-six per cent. of total cost.) It becomes, then, of considerable consequence whether good plant-material can be had at reasonable prices.

It is not easy to determine at what advance over the cost of production an article may be sold to make profitable business; so much depends upon the size of the business. A druggist must take from 100 to 500 per cent., while a steel mill may make money with a four per cent. margin. Nor is it easy to determine how far abundant and cheap supply will stimulate demand. Limited demand entails high prices, and an oversupply may have to be thrown away, because not salable, and the loss must be charged upon the part that is sold.

Mr. Fernow went on to give the cost of production of the seedlings in the Government Forest Nurseries in Germany, tabulating the elements which enter into the cost, and comparing them, so far as possible, with the conditions in this country. These tables were most instructive, but we have not space to reproduce them here. The conclusion of the whole matter was that the main service that the nurseryman can do for forestry is to provide reliable plant-material as cheaply as it can be done consistently with his own prosperity.

SCIENCE AND PRACTICE.

Mr. Thomas Meehan said that it had been fifty years since he wrote his first article for a horticultural paper, and it seemed to him, although horticulture had made rapid advances in all of those years, that it had not progressed as far on the scientific side as it ought to have done. As a practical example of some scientific truths, upon which good practice is based, he instanced the fact that fibrous roots live only a year. They do their work and then die. Where there are a hundred small roots now about a young tree there will be in a few years only a few large ones radiating from it, like railroads on a map. These big roots alone have the strength to send out fibres, and the root is of no value to the tree until new white fibres are growing. Therefore, it may be that a mass of fibrous roots in a tree for transplanting is injurious. They are weak, they have no vital power to put out rootlets, and they may keep the soil from contact with the big roots, which, therefore, do not find the proper medium in which to throw out feeding roots.

Another fact which observation teaches is that roots die in exact proportion to the amount of tops that are cut off. If a tree is pollarded nine-tenths of the roots may die and then invite a fungus which spreads to the living roots. It is said that the branches which sprout from these pollards grow strongly because the roots are stronger below them, but in fact they grow from the food stored up in the trunk, just as shoots three or four feet long often grow out of logs which lie by the wayside. Generally pollarded trees die after this operation has been frequently performed. Look, for example, at an Osage Orange hedge. If one of the trees at the end is allowed to grow it will make a trunk as big as a man's body in twenty years, while the hedge plants of the same age, their vital power being weakened by constant cutting, are no larger than a man's wrist. Of course all pruning is not to be condemned, although it does weaken the vital power of the plant. We prune for other purposes than to make long-lived trees.

AUTUMN DELIVERIES OF NURSERY STOCK.

Mr. G. E. Meissner, of Missouri, in speaking of the shipment of nursery stock in autumn, said that in recent years the practice of contracting to deliver this stock very early in the fall has become so prevalent that the young trees are often dug for fall planting before the wood has fully ripened. They are torn from the ground while the young rootlets are still at work, and the leaves are stripped from them while they are still busy digesting the sap, and, of course, they are in no condition to endure the winter. Yet nurserymen often advertise deliveries as early as the 20th of September, because they say people demand it. It is for this reason, perhaps, that fall planting is coming into disrepute. Of course, planting which may be seasonable in Ohio is not so in Tennessee, and there is a great difference in the quality of trees in this respect. For example, a Currant-bush or Cherry-tree can be dug and shipped when a Wild Goose Plum would be ruined.

After some discussion, the Convention passed a resolution in which they disapproved and protested against the lifting of trees before the leaves had ripened and the wood had attained a proper degree of maturity, and requested all members to discountenance and discourage this practice.

Massachusetts Horticultural Society.

THE Rhododendrons made a brilliant display at the Horticultural Hall, Boston, on the 7th instant. The chief exhibitors were Messrs. Nathaniel T. Kidder, of Milton; Francis B. Hayes, of Lexington; John L. Gardner, of Brookline, and H. H. Hunnewell, of Wellesley. The following selection gives the largest and best-formed trusses, with a good range of variety: James McIntosh, Michael Waterer, Princess Mary of Cambridge, Lady Grey Edgerton, Henry W. Sargent, Sherwoodii, Purpureum grandiflorum, Delicatissimum, Sir William Sebright, Charles Dickens, Sappho, The Queen, Sir Joseph Whitworth and Helen Waterer. The show of hardy Azaleas was rather weak and the varieties insufficiently distinct. It seemed a pity, however, to send so much of the plants with these flowers when less would have served the purpose as well.

The large white inflorescences of the old-fashioned Snowball, and the smaller, though more numerous, ones of the Japanese species, were very attractive. A single flowering branch of Laburnum was sufficient to show the highly decorative character of this elegant tree, and sprays of large-flowering varieties (not named) of Clematis suggested the utility of these climbing plants. Conspicuous among the exhibits of herbaceous plants were Oriental Poppies, Irises, Columbines and Day Lilies. The miscellaneous exhibits included a plant in bloom of the interesting and beautiful *Utricularia nelumbifolia;* flowering branches of that magnificent greenhouse climber, *Bougainvillea glabra*, and flowers of *Tacsonia Van Volxemi*, which is a splendid climbing greenhouse plant, with large crimson flowers.

Notes.

Green Corn is coming into market from the Carolinas, Raspberries from Norfolk, Watermelons from Georgia and Peaches from Florida.

The great Palm which stood in the Gardens of the British Embassy at Rome blew down during a late gale. This was not only the tallest Palm in Rome, but it was memorable because pierced by a cannon-ball during the attack on the city in September, 1870. It was strapped with iron where it had been struck.

The Central Park has never looked so well as it does this year, and much of the improvement comes from the removal of the decaying conifers, chiefly Norway Spruces, which last season disfigured its beauty. No one misses the thousands

that have been cut, not even the misguided enthusiasts who tried to impede the work of the park authorities.

Among the Hybrid Perpetual Roses blooming out-of-doors not one has behaved better this season than Ulrich Brunner, with its full and perfect buds, exquisite color and rare fragrance. The Baroness Rothschild, too, is blooming unusually well, and so are those excellent sorts, Magna Charta and Paul Ricaut. If they would only bloom again, as do other hybrids which have no China blood in them! John Hopper, Mrs. Charles Wood and Rev. J. B. Camm are uncommonly good, and Moss Roses never bloomed better.

The folly of protesting against the popularization of botanical names in the belief that vernacular ones are all-sufficient was recently shown in an article in a horticultural paper which spoke of the poisonous qualities of some of our common plants. "Ivy" and "Dogwood" were named as plants which it is dangerous for many persons even to handle. Of course the reference was to the so-called Poison Ivy and Poison Dogwood, neither of which has any relationship to the plant whose name has been given it. Both belong to the Rhus family, and, indeed, as Rhus is synonymous with the vernacular Sumach, there is no reason, save popular perversity, why they should not always be called Poison Sumachs. Such a misleading use of terms as we cite, where even the qualifying "Poison" was omitted, may well decrease the pleasure of timid readers as seeming to warn them against two kinds of beautiful and wholly innocuous plants.

A convenient little pamphlet on the treatment of plant-diseases has lately been sent out by the section of vegetable pathology of the Department of Agriculture. At various times we have called attention to the remedies as they have been tried and approved; but here are grouped together, in a score of pages, the remedies for diseases of the Grape, the powdery mildew of the Apple and the leaf-blight of the Pear by B. S. Galloway; Professor Maynard's experience with mildew of Lettuce and the Rose; Professor Halsted's study of gall-fungus and scald of the Cranberry; Professor Goff's application for Apple-scab, and the hot water remedy for smut in Oats by Professor Kellerman. The pamphlet also contains notes on the effect of certain fungicides upon the vitality of seeds, upon the contagious character of Peach yellows, upon copper salts as fungicides, and upon different spraying apparatus. The bulletin is an extract from the *Journal of Mycology*, vol. vi., No. 1.

In "Fort Ancient," a volume recently published by Mr. Warren K. Moorehead, of the Smithsonian Institute, a full description is given of the prehistoric remains in Warren County, Ohio, which are popularly called by this name. They seem to have formed a vast fortress of earthen walls nearly four miles in circumference, and a plausible supposition makes them not more than nine centuries old, and the work of the Mandan Indians, a branch of the great Dakotan or Siouan race. One of Mr. Moorehead's chief aims in writing his book was to advocate the preservation of the vast relic by the formation of a sort of public park similar to that which contains the more famous "Serpent Mound" in the same state now under the guardianship of the Peabody Museum of Archæology. The interesting illustrated description of this Serpent Mound Park, which was recently published in the *Century Magazine*, should certainly excite even those who have not read Mr. Moorehead's book to interest themselves in the plan he proposes.

Since Professor Halsted's article on the Oak blight, in another column of this issue, was put in type we have noticed that the Sycamores in Central Park are generally affected. Some leaves from a diseased tree on Jersey City Heights were sent to New Brunswick, and the blight is identified as the true *Gliosporium nervisequum*. We have observed that the blight has extended throughout northern New Jersey and should be obliged if correspondents would report from other places. Professor Halsted writes that there is little hope from the application of fungicides, because the trees are large and the foliage cannot be easily reached. The injury to the foliage is so serious that the trees cannot last many seasons if the disease persists. The advice to cut down the badly affected Oaks and Sycamores, in the hope of exterminating the disease, seems rather radical, although Professor Halsted suggests it. There is no certainty that this remedy would be effectual, and the fungus itself could inflict no greater harm, because it would mean the extermination of the Sycamore in this region. There is always the hope that diseases of this sort, after running through a cycle, will be checked in some unknown way, disappearing as mysteriously as they came.

In the June number of the *North American Review* Ouida writes entertainingly about gardens, taking for her text a passage in which Lord Lytton reminds us that whoever has a garden has one chamber roofed by heaven, in which the poet and philosopher can feel at home. The seclusion and homelikeness which distinguish every real private garden from a public park are dwelt upon as its essential charm. It follows naturally that a place dedicated to retirement and reflection should be simple and natural, and this gives the author an argument against artificiality of construction, elaborateness of decoration and over much sweeping and pruning, and it justifies a plea for old-fashioned flowers, about which hang memories of a happy childhood. And here is a passage which we cannot forbear to quote: "Of all emotions which give the nature capable of it the purest and longest-lived pleasure, the sense of the beauty of natural things is the one which costs least pain in its indulgence, and most refines and elevates the character. The garden, the meadow, the wood, the orchard, are the schools in which this appreciative faculty is cultured most easily and enjoyably. Dostoïevsky may find food for it on the desolate steppe, and Burns in the dreary plowed furrow; but to do this, genius must exist in the man who feels: it is to the ordinary sensibilities, the medium mind, the character which is malleable, but in no way unusual, that this training of the eye and of the heart is necessary; and for this training there is no school so happy and so useful as a garden. All children, or nearly all, take instinctive delight in gardens: it is very easy to make this delight not merely an instinctive, but an intelligent one; very easy to make the arrival of the first Crocus, the observation of the wren's nest in the Ivy-hedge, of the perennial wonders of frost and of sunshine, of the death and the resurrection of Nature, of the deepest interest to a young mind athirst for marvels."

Monsieur Franchet publishes in the *Revue Horticole* of May 16th an important paper on the new species of Lespedeza recently discovered in western and south-western China. His remarks on the climate of this last region are of special interest, as this is now botanically one of the most interesting regions of the world from the great number of remarkable plants it contains, some of which, too, seem destined to play an important part in the decoration of gardens. "The temperature of the provinces of south-western China," Monsieur Franchet says, "and particularly that of Yu-nan, is not in effect as high as might be supposed if the question of latitude only is considered. In that region, which is absolutely continental, high altitudes reduce the temperature, which might otherwise be excessive on account of its neighborhood to the tropics. It is easy to understand that a region broken in all directions by mighty mountain chains, some of which, like the Tchang-chan, reach twelve to eighteen thousand feet, as is the case with several summits of the chain Li-kiang, and are covered by snow and eternal ice, although it is placed between the twenty-sixth and twenty-eighth degrees of north latitude, cannot have a uniformly high temperature; in fact, the vegetation of Yu-nan bears the mark of an exceedingly variable climate, although certain valleys, on account of their position and direction, attract heat and so become the refuge of a considerable number of tropical species, while the slopes of the mountains exposed to the north are occupied by a flora which resembles that of temperate regions, and where forests of Rhododendrons and of Oak are the prevalent features (*Quercus Bungeana* and *Q. dentata*, both species of which grow also in the neighborhood of Pekin). It happens, therefore, that the greatest surprises greet the explorers of the vegetation of this region, who can in the same day pass from the plants of the tropics to those of the coldest regions of the world, gathering in the morning the *Cæsalpinia sepiaria*, for example, and end their day before little thickets of *Rhododendron fragrans*, the ordinary inhabitant of the polar region."

Catalogues Received.

J. G. Bubach, Princeton, Ill.; Strawberries.—William Bull, Chelsea, London, S. W., Eng.; Rare Plants and Orchids.—Dammann & Co., San Giovanni a Teduccio, near Naples, Italy; Bulbs, Roots and Orchids.—John Laing & Sons, Forest Hill, London, S. E., Eng.; Plants, Novelties, Begonias, etc.—Pitcher & Manda, Short Hills, N. J.; Cypripediums.—James Veitch & Sons, Coombe Wood, Kingston Hill, Surrey, Eng.; Plants, including Novelties for 1890.—Thomas S. Ware, Tottenham, London, Eng.; Choice Dahlias and Summer Flowering Plants.—C. B. Whitnall & Co., Milwaukee, Wis.; Palms and Ferns.—B. S. Williams & Son, Upper Holloway, London, N., Eng.; Orchids, Ferns, Palms, Stove and Greenhouse Plants.—Yokohama Gardeners' Association, No. 21 Nakamura, Yokohama, Japan; Plants, Shrubs, Trees, Seeds and Bulbs.